Please amend page 17, line 1 as follows:

~~Claims~~ **What is claimed is:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

wherein the method comprises the steps of:

conducting an acquisition procedure using the single photon source to produce detection data; and

processing said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array.

2. (Currently amended) A method according to claim 1, ~~where~~ wherein said conducting step further comprises conducting ~~acquisition procedure includes~~ a blank scan acquisition.

3. (Currently amended) A method according to claim 1 ~~or 2~~, wherein the scanner includes a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the single photon source,

and wherein the step of processing said detection data comprises processing said artificial coincidence count data.

4. (Original) A method according to claim 3, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that the measured counts of a particular artificially coincident pair of detectors is related to a weighted sum of their individual efficiencies.

5. (Currently amended) A method according to ~~any preceding claim~~ claim 1, wherein the scanner is a non-rotating scanner.

6. (Currently amended) A method according to ~~any of claims 1 to 4~~ claim 1, wherein the scanner is a rotating scanner.

7. (Currently Amended) A method according to claim 6, wherein the scanner comprises two single photon sources and the method further comprises the step of selectively operating one of the two single photon sources during the ~~acquisition procedure~~ conducting step.

8. (Currently amended) A method according to ~~any preceding claim~~ claim 1, further comprising the step of and generating an output, responsive to said data representative of efficiencies, on an output device for an operator.

9. (Currently amended) A method according to ~~any preceding claim~~ claim 1, wherein said processing step further comprises processing said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

10. (Currently Amended) A method according to claim 9, further comprising the step of processing said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

11. (Currently amended) A method according to claim 9 ~~or 10~~, further comprising the step of processing said data representative of efficiencies using a function determining a parameter relating to an amount of variation therein.

12. (Original) Computer software for generating detector efficiency data for a positron emission tomography scanner including:

a detector array for generating detection data; and

a single photon source,

wherein the software is adapted to operate on detection data generated by conducting an acquisition procedure using the single photon source, and

wherein the software is adapted to process said detection data using an efficiency estimation algorithm to calculate data representative of the efficiencies of individual detectors in said array.

13. (Currently amended) Computer software according to claim 12, ~~where~~ wherein said acquisition procedure includes a blank scan acquisition.

14. (Currently amended) Computer software according to claim 12 ~~or 13~~, wherein the scanner includes a coincidence detection system for producing coincidence count data (M_{ij}) in the detection data during an acquisition when a positron emitting source is inside the scanner, and wherein the scanner is arranged to produce artificial coincidence count data (M'_{ij}) during an acquisition using the single photon source, and wherein the software is adapted to operate on said artificial coincidence count data.

15. (Original) Computer software according to claim 14, wherein the efficiency estimation algorithm is based upon a measurement model which is additive, in that an efficiency of a particular artificially coincident pair of detectors is related to a sum of their individual efficiencies.

16. (Currently amended) Computer software according to ~~any of claims 12 to 15~~ claim 12, wherein the scanner is a non-rotating scanner.

17. (Currently amended) Computer software according to ~~any of claims 12 to 15~~ claim 12, wherein the scanner is a rotating scanner.

18. (Currently Amended) Computer software according to claim 17, wherein the scanner comprises two single photon sources and the ~~method comprises~~ software is adapted to selectively ~~operating~~ operate one of the two single photon sources during the acquisition procedure.

19. (Currently amended) Computer software according to ~~any of claims 12 to 18~~ claim 12, wherein the software is adapted to generate an output, responsive to said data representative of efficiencies, on an output device for an operator.

20. (Currently amended) Computer software according to ~~any of claims 12 to 19~~ claim 12, wherein the software is adapted to process said data representative of efficiencies to identify detector elements, or groups of detector elements having relatively low efficiencies.

21. (Original) Computer software according to claim 20, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an average over a plurality of detector elements.

22. (Currently amended) Computer software according to claim 20 ~~or 21~~, wherein the software is adapted to process said data representative of efficiencies using a function determining a parameter relating to an amount of variation therein.

23. (Currently amended) A data carrier comprising computer software according to ~~any of claims 12 to 22~~ claim 12.